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USSR EXPERIMENTS WITH DIFFERENT TYPES OF BOILER FUEL

LEAN AND LONG-FLAME COALS

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In 1949, heat experiments were carried out by the Orgkommunenergo Trust in the steam boiler of a 1,000-kilowatt power-generating train by burning the following types of fuel: lean coal, Type T; Donets coal, Type D; a mixture of 75-percent Type T coal and 25 percent Type D; a mixture of 50 percent Type T coal and 50 percent Type D; and Moscow basin coal.

The object of the experiments was to establish the efficiency and operational characteristics of the boiler when the various specified coals were burned.

The steam boiler, set up in a separate car of the power-generating train, was tubular with two drums, with a heating surface of 115 square meters and a working pressure of 30.6 atmospheres. It was provided with a superheater to superheat the steam to 388 degrees Centigrade and a screened firebox with side outlets for the gases.

Inferences derived from the experiments are as follows:

1. Coals with a high volatile substance content may be used as fuel for boilers of the above type, but D and G coals are the best for this purpose.

2. The use of straight T coal results in a considerable loss of heat. If T coal must be used, it should be mixed with at least 25 percent of D or G coal.

3. If the above mixture is used, the condition of the pipes should be regularly checked and measures taken to protest them from wear.

4. To increase the efficiency of the boiler of the 1,000-kilowatt power-generating train it is necessary to install a water economizer, to put the automatic combustion device and the installation for the recovery of lost heat into constant operation, and to ensure the operation of a ventilation draft under the fire grate.

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LIGNITE

D. G. Fayershteyn, A. M. Tkacheva

In 1949, the Boiler-Construction Chair of the Kharkov Polytechnic Institute imeni V. I. Lenin inspected the operations of lignite-burning fireboxes in several electric power stations of the Ukrainian SSR. As a result of its observations and an analysis of tests carried out by various institutions, and tests made by the chair itself in an experimental firebox in a boiler of the Kharkov Mechanic and Machine-Building Institute, plans were drawn up and put into effect for the standard construction of these fireboxes.

It was found that lignite with an ash content not exceeding 30 percent in the dry mass and a moisture content ranging from 55 to 58 percent in the raw fuel could be used effectively and very easily in these fireboxes.

The work of standardizing lignite-burning fireboxes for low-power boilers is only one of the stages of a wide range of activities planned by the Boiler-Construction Chair for regulating the designing of firebox installations intended to burn local and low-grade fuel.

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